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(54) COVER TAPE FOR TAPING PACKAGING FOR ELECTRONIC PARTS

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a cover tape for a taping package having a stable heat sealing property for a carrier tape and a superior fastening-up property and satisfying all the functions such as a conductive property and transparency.

SOLUTION: A base material film layer, a soft material layer and a thermal adhering layer are laminated in sequence. The soft material layer is made of a linear low density polyethylene. The thermal adhering layer includes a thermoplastic resin and conductive fine particles. An amount of inclusion of the conductive fine particles in the thermal adhering layer shows a mass rate of 150 to 500 of conductive fine particles against 100 of thermoplastic resin at the thermal adhering layer. The thickness of the soft material layer is 10 to 50 μm . The thickness of the thermal adhering layer is 0.05 to 1.9 μm .



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CLAIMS

[Claim(s)]

[Claim 1] In the covering tape which heat seals chip mold electronic parts to KYARIATE-PU which carries out a taping package, the laminating of a base material film layer, a flexible material layer, and the heat glue line is carried out one by one. A flexible material layer with straight chain-like low density polyethylene The content of the conductive particle of said heat glue line receives [a heat glue line] the thermoplastics 100 of a heat glue line including thermoplastics and a conductive particle. The covering tape for a taping package of the electronic parts characterized by being the mass rate of the conductive particles 150-500, and for the thickness of a flexible material layer being 10-50 micrometers, and the thickness of a heat glue line being 0.05-1.9 micrometers.

[Claim 2] The covering tape for a taping package of the electronic parts according to claim 1 which the surface-electrical-resistance value of the heat glue line in the above-mentioned covering tape is in the range of 105-1013ohms / **, and are characterized by the charge damping time being 2 or less seconds 99%.

[Claim 3] The covering tape for a taping package of the electronic parts according to claim 1 to 2 characterized by for total light transmission being 75% or more smaller than 100%, and the Hayes value being 50% or less more greatly than 0% in the above-mentioned covering tape.

[Claim 4] The covering tape for a taping package of the electronic parts according to claim 1 to 2 characterized by the numeric value which shows the zip rise nature to which peel strength subtracted the minimum value from the maximum of 10 - 130g/1mm width of face and peel strength in the peel strength test in the above-mentioned covering tape being below 30g/1mm width of face more greatly than 0g/1mm width of face.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the covering tape heat sealed to KYARIATE-PU which is used for the taping package object which contains chip mold electronic parts, and which formed the stowage continuously in more detail about the covering tape for a taping package.

[0002]

[Description of the Prior Art] (Technical background) A taping package is carried out and the surface mount to an electronic-circuitry substrate etc. is presented with chip mold electronic parts, such as IC chip and a capacitor, in recent years. After a taping package contains electronic parts to the carrier tape which carried out embossing shaping of the crevice which contains electronic parts continuously, it is heat sealed on the covering tape. At the time of mounting, in order to remove the covering tape of a taping package object, to take out electronic parts automatically and to carry out a surface mount to an electronic-circuitry substrate, a covering tape must be able to exfoliate easily from a carrier tape. If this exfoliation force (it is also called peel strength, heat-sealing reinforcement, or PIRUOFU reinforcement) of exfoliating is too low, since a covering tape will separate also from the migration of those other than the time of mounting and electronic parts will be omitted, the heat-sealing nature which can secure the predetermined exfoliation force is required. However, if too conversely strong, in case a covering tape will be exfoliated with a mounting machine, it cannot stabilize and exfoliate, but exfoliation often becomes intermittent, a carrier tape vibrates up and down, and especially, if the difference (it is called a zip rise) of the maximum of the exfoliation force and the minimum value is large, a carrier tape will vibrate violently. By this vibration, the electronic parts of a receipt crevice jumped out, or the receipt crevice of a carrier tape or the covering tape was contacted, and there was a possibility that breakage, degradation, or contamination might arise. For this reason, zip rise nature with few differences of the maximum of the exfoliation force and the minimum value is required. Moreover, by static electricity which generates a covering tape at the time of exfoliation, a short circuit and a possibility of carrying out an electrostatic discharge have electronic parts, and conductive grant is required of a covering tape. Furthermore, in order to detect proper electronic parts and non-** to mounting, the transparency which spaces and checks a covering tape in the state of a taping package object is required. Thus, the covering tape with which are satisfied of all the functions of heat-sealing nature, zip rise nature, conductivity, and transparency was called for.

[0003] (Advanced technology) The covering tape which carried out the laminating of the heat glue lines (it is also called a heat-sealing layer and HS layer), such as polyethylene (PE), denaturation polyethylene, or an ethylene-vinyl acetate copolymer (EVA), to the carrier tape on which sheet forming consists of easy polyvinyl chloride system resin or polystyrene system resin to polyester film (base material) is known conventionally. However, in case a covering tape is exfoliated with a mounting machine, the exfoliation force is not stabilized, but a zip rise phenomenon occurs, a carrier tape vibrates, and there is a problem that electronic parts jump out of a receipt pocket. Then, it considers as the configuration of a base material / flexible material layer / heat glue line, and the thing using the interlaminar-peeling force of a flexible material layer and a heat glue line and the covering tape which tends to be made to heat seal a heat glue line good to a carrier tape by the cushioning properties of a flexible material layer, and is going to acquire the predetermined exfoliation force are known (for example, the patent reference 1 thru/or the patent reference 25, reference.). However, since electronic parts tend [very] to jump out also of a slight zip rise and the effectiveness of a mounting machine falls by the miniaturization of electronic parts, or improvement in the speed of a mounting machine, in order to satisfy all the functions of heat-sealing nature, zip rise nature, conductivity, and transparency, there is a trouble that it cannot respond, by the above-mentioned patent

reference. On the other hand, in order to give conductivity, the method of scouring opaque electric conduction particles, such as metal particle metallurgy group fiber, is learned (for example, patent reference 26 reference.). However, in order to acquire the transparency which is extent which can perform the visual inspection of the contained electronic parts, there is a problem that the skilled distributed technique is required and causes the rise of a manufacturing cost. Moreover, the method of scouring transparent electric conduction particles, such as metallic-oxide particles, such as tin oxide and a zinc oxide, is learned (for example, the patent reference 27 thru/or the patent reference 30, reference.). However, although the transparency of a glue line is maintained, there is a fault that the zip rise property at the time of mounting is bad, and electronic parts jump out.

[0004]

[Patent reference 1] JP,3-78768,U [the patent reference 2] JP,5-32288,A [the patent reference 3] JP,7-130899,A [the patent reference 4] JP,7-172463,A [the patent reference 5] JP,8-192886,A [the patent reference 6] JP,8-258888,A [the patent reference 7] JP,9-156684,A [the patent reference 8] JP,9-201922,A [the patent reference 9] JP,7-251860,A [the patent reference 10] JP,2000-327024,A [the patent reference 11] JP,2001-315847,A [the patent reference 12] JP,2002-12288,A [the patent reference 13] JP,9-111207,A [the patent reference 14] JP,9-216317,A [the patent reference 15] JP,9-267450,A [the patent reference 16] JP,7-96583,A [the patent reference 17] JP,7-96584,A [the patent reference 18] JP,7-96585,A [the patent reference 19] JP,7-96967,A [the patent reference 20] JP,8-295001,A [the patent reference 21] JP,9-109319,A [the patent reference 22] JP,9-314717,A [the patent reference 23] JP,10-95448,A [the patent reference 24] JP,11-115088,A [the patent reference 25] JP,2001-348561,A [the patent reference 26] JP,2000-142786,A [the patent reference 27] JP,5-8339,A [the patent reference 28] JP,8-295001,A [the patent reference 29] JP,9-109313,A [the patent reference 30] JP,9-267450,A [0005]

[Problem(s) to be Solved by the Invention] Then, this invention is made in order to cancel such a trouble. The purpose is offering the covering tape for a taping package with which is equipped with the stable heat-sealing nature to a carrier tape, and good zip rise nature, and it is satisfied of all the functions of conductivity and transparency.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the covering tape for a taping package of the electronic parts concerning invention of claim 1 In the covering tape which heat seals chip mold electronic parts to KYARIATE-PU which carries out a taping package, the laminating of a base material film layer, a flexible material layer, and the heat glue line is carried out one by one. A flexible material layer with straight chain-like low density polyethylene The content of the conductive particle of said heat glue line receives [a heat glue line] the thermoplastics 100 of a heat glue line including thermoplastics and a conductive particle. It is the mass rate of the conductive particles 150-500, and the thickness of a flexible material layer is 10-50 micrometers, and it is made for the thickness of a heat glue line to be 0.05-1.9 micrometers. According to this invention, when it can stabilize and heat seal by good heat-sealing nature to a carrier tape at the time of a taping package and high-speed mounting of the small electronic parts is carried out, electronic parts do not jump out by good zip rise nature, but the covering tape for a taping package on which the effectiveness of a mounting machine does not fall and which has the function of conductivity and transparency further is offered. The covering tape for a taping package of the electronic parts concerning invention of claim 2 The surface-electrical-resistance value of the heat glue line in the above-mentioned covering tape is in the range of 105-1013ohms / **, and 99%, so that the charge damping time may be 2 or less seconds Since according to this invention antistatic nature is excellent with the conductivity of a heat glue line and long duration maintenance of this antistatic nature is carried out The covering tape for a taping package which neither a short circuit nor an electrostatic discharge can produce [electronic parts] easily is offered also by static electricity with which the contained electronic parts generate ** and a covering tape at the time of exfoliation to be destroyed with static electricity. In the above-mentioned covering tape, total light transmission is smaller than 100%, the covering tape for a taping package of the electronic parts concerning invention of claim 3 is 75% or more, and it is made for ** and the Hayes value to be 50% or less more greatly than 0%. According to this invention, in order to detect proper electronic parts and non-** to mounting, the covering tape for a taping package which is excellent in the transparency which can space and check a covering tape in the state of a taping package object is offered. In the peel strength test in the above-mentioned covering tape, the numeric value peel strength indicates the zip rise nature to which the minimum value was subtracted from the maximum of 10 - 130g/1mm width of face and peel strength to be is larger than 0g/1mm width of face, and the covering tape for a taping package of the electronic parts concerning invention of claim 4 is below 30g/1mm width of face. According to this

invention, when carrying out high-speed mounting of the small electronic parts, electronic parts do not jump out by good zip rise nature, but the covering tape for a taping package on which effectiveness of a mounting machine cannot fall easily is offered.

[0007]

[Embodiment of the Invention] The embodiment of this invention is explained to a detail with reference to a drawing. Drawing 1 is the perspective view of a taping package object which used the covering tape of this invention.

(Taping package) First, in the taping package 5, after containing electronic parts to the carrier tape 3 (it is also called an embossing tape) which carried out embossing shaping of the crevice which contains these electronic parts for chip mold electronic parts, such as IC chip and a capacitor, continuously, it is the package object heat sealed on the covering tape 1. With this package object, it is circulated by electronic parts, they are kept, and the machine called a mounting machine is supplied. In a mounting machine, the covering tape 1 is removed, the electronic parts contained by the crevice established in the carrier tape 3 are taken out, and it is mounted to an electronic-circuitry substrate etc.

[0008] (Carrier tape) As an ingredient of such a carrier tape 3, an ingredient with easy sheet forming, such as a polyvinyl chloride, polystyrene, polypropylene, polyester, and a polycarbonate, is usually applicable. You may be the independence of these resin and/or the copolymerization resin which makes these a principal component, a mixture (an alloy is included), or the layered product which consists of two or more layers. A moldability is a good thing and these sheets have a desirable unstretched film. Although the thickness of this sheet can apply about 30-1000 micrometers, 50-700 micrometers is suitable for it, and its 80-300 micrometers are usually the optimal. By the thickness beyond this, a moldability is bad, and, less than [this], reinforcement runs short. Additives, such as a bulking agent, a plasticizer, a coloring agent, an antistatic agent, and an electric conduction agent, may be added to this sheet if needed.

[0009] Male-and-female metal mold forms this sheet by the fabricating methods, such as plastic non-heating press forming, the vacuum forming, pressure forming and vacuum pressure sky shaping to heat, or shaping which uses a plug assist together to these. Polyvinyl chloride system resin with a sufficient moldability and polystyrene system resin are suitable. As a carrier tape used for this invention, either [more than] is applicable.

[0010] Next, the covering tape of this invention is explained. Drawing 2 is the sectional view of the covering tape in which one example of this invention is shown.

(Lamination of a covering tape) At least, that the laminating of the flexible material layer 15 and the heat glue line 17 should just be carried out, the covering tape of this invention may prepare easily-adhesive processing layers, such as an etching primer layer and easily-adhesive processing, in the base material film layer 11 in order to raise an adhesive property between each class. For example, in drawing 2, the laminating of the adhesives layer 13, the flexible material layer 15, and the heat glue line 17 is carried out to this order the base material film 11 and if needed. A flexible material layer is straight chain-like low density polyethylene (it is called LLDPE), and thickness is set to 10-50 micrometers. In order to give antistatic nature to the heat glue line 17, including thermoplastics and a conductive particle, the content of a conductive particle considers as the mass rate of the conductive particles 150-500 to thermoplastics 100, and thickness is set to 0.05-1.9 micrometers. Moreover, the flexible material layer 15 of the base material film 11 and the ingredient layer for the electrification prevention also to an opposite side may be prepared, or electric conduction processing may be carried out.

[0011] (Point of invention) The point of this invention is to satisfy two or more set ability in which the heat-sealing nature explained with the conventional technique, zip rise nature, conductivity, and transparency carry out phase conflict. First, although you want to increase sharply the amount of the conductive particle made to contain to a heat glue line from the former in order to raise 1 conductivity, transparency has fallen remarkably under the effect of a lot of conductive particles. Then, although thickness of a heat glue line was made very thin with 0.05-1.9 micrometers in order to raise 2 transparency, heat-sealing nature got worse to the carrier tape, and adhesive strength (it becomes peel strength in case it exfoliates, heat-sealing reinforcement and) has been insufficient. Then, in order to raise 3 heat-sealing nature, while thickening thickness of a flexible material layer with 10-50 micrometers 4) wholeheartedly the straight chain-like low density polyethylene (LLDPE) in which specific flexibility is shown as an ingredient of a flexible material layer by using this ingredient of the thickness of a header and the predetermined range in piles for research Flexibility sufficient at the time of heat sealing is secured, and heat-sealing nature was raised, and on the occasion of the exfoliation in the time of mounting under ordinary temperature, it was tough and came for tearing strength to satisfy good high zip rise nature. The specific flexibility of LLDPE is a property whose

toughness, such as tensile strength, serves as the false structure of cross linkage by generation of the Thailand molecule which combines a polymer crystal comrade, and increases under the ordinary temperature at the time of mounting, although rubber elasticity improves by the free movement of a polymer chain and flexibility and a fluidity become good under a carrier tape and the temperature to heat seal. That is, only with the combination of the heat glue line which contains a conductive particle so much very thinly, and the flexible material layer which limited an ingredient and thickness, what satisfies all of conductivity, heat-sealing nature, transparency, and zip rise nature is found out, and it results in this invention.

[0012] (Base material film) If there is thermal resistance which is equal to the mechanical strength which bears the external force under preservation, manufacture, and a taping package as a base material film 11 of a covering tape, according to an application, various ingredients are applicable. For example, polyethylene terephthalate, polybutylene terephthalate, A polyethylenenaphthalate and polyethylene terephthalate-isophthalate copolymer, Polyester resin, such as a terephthalic-acid-cyclohexane dimethanol-ethylene glycol copolymer, Polyamide system resin, such as nylon 6 and Nylon 66, polypropylene, Vinyl system resin, such as polyolefine system resin, such as the poly methyl pentene, and a polyvinyl chloride, Acrylic resin, such as polyacrylate, poly methacrylate, and polymethylmethacrylate, Imide system resin, such as polyimide and polyether imide, polyarylate, There are cellulose system films, such as styrene resin, such as engineering plastics, such as polysulfone, polyether sulphone, and polyphenylene ether, a polycarbonate, and ABS plastics, and cellulose triacetate cellulose die acetate, etc. This base material film may be the copolymerization resin which uses these resin as a principal component, a mixture (alloy ** is included), or a layered product which consists of two or more layers. Although an oriented film or an unstretched film is sufficient as this base material film, it is the purpose which raises reinforcement and the film extended to 1 shaft orientations or 2 shaft orientations is desirable. Although the thickness of this base material film can apply about 2.5-300 micrometers, 6-100 micrometers is suitable for it, and its 12-50 micrometers are usually the optimal. By the thickness beyond this, the heat-sealing temperature at the time of a taping package becomes high, and a cost side is also disadvantageous and, less than [this], runs short of mechanical strengths.

[0013] Although this base material film 11 is used as the shape of the film which consists of at least one layer of these resin, a sheet, and a board, it names these configurations a film generically on these specifications. Usually, since ** of a cost side and a mechanical strength is good, the film of polyester systems, such as polyethylene terephthalate and polyethylenenaphthalate, is used suitably, and polyethylene terephthalate is the optimal. This base material film 11 may perform easily-adhesive processing of corona discharge treatment, plasma treatment, ozonization, frame processing, primer (called anchor coat, adhesion promoter, and *****) spreading processing, a preheat treatment, dust-removing dust processing, vacuum evaporatio processing, alkali treatment, etc. to a laminating side in advance of the laminating of the flexible material layer 15. This resin film may add additives, such as a bulking agent, a plasticizer, a coloring agent, and an antistatic agent, if needed.

[0014] (Adhesives layer) The adhesives layer 13 may be formed if needed in between the base material film 11 and the flexible material layer 15. By pasting up firmly and carrying out the laminating of the base material film 11 and the flexible material layer 15, the mechanical strength of the base material film 11 and the toughness of the flexible material layer 15 can multiply this adhesives layer 13, and it can demonstrate a sectility-proof with the stronger covering tape 1.

[0015] (LLDPE) As a flexible material layer 15, straight chain-like low density polyethylene (LLDPE) can be applied and there are that by which the polymerization was carried out with the Ziegler type catalyst, and a thing the polymerization was carried out [a thing] by the metallocene system catalyst in this LLDPE. Since LLDPE is supple, it excels in low-temperature heat-sealing nature, hot tuck nature, shock resistance, shock resistance, and tearing strength and especially the metallocene LLDPE can control a molecular weight distribution narrowly, the fall beyond the greasiness nature accompanying low crystallization and the need for the melting point and the emitting smoke at the time of shaping are suppressed, and the elastomer-engine performance is also provided. Therefore, the metallocene straight chain-like low-density-polyethylene polyethylene (it is called Metallocene LLDPE) could apply LLDPE which is excellent in flexibility, heat-sealing nature, and tearing strength as a flexible material layer 15, and the polymerization was carried out [polyethylene] by the metallocene system catalyst still more preferably is more desirable.

[0016] (LLDPE) LLDPE manufactured with a Ziegler type catalyst is an ethylene-alpha olefin copolymer. The comonomer (alpha olefin) which constitutes the resin of this LLDPE is the alpha olefin of 4-20 preferably three or more carbon atomic numbers. As an example of this alpha olefin, a propylene, 1-butene, 1-hexene, Straight chain-like monoolefins, such as 1-octene, 1-nonene, 1-decene, 1-undecene, and 1-

dodecen, A 3-methyl-1-butene, 3-methyl-1-pentene, 4-methyl-1-pentene, There are branched chain monoolefins, such as a 2-ethyl -1, 2-ethyl-1-hexene, 2 and 2, and 4-trimethyl-1-pentene, a monoolefin further permuted by nuclei, such as styrene. These may be used for carrying out a copolymer to ethylene independently, and may be used combining two or more sorts. Moreover, a mechanical-strength property becomes good with six or more carbon atomic numbers **** for alpha olefins, and it excels in shock resistance, and tearing strength becomes remarkably high, and it is more suitable.

[0017] ((LLDPE) Metallocene) Since the fall beyond the greasiness nature accompanying low crystallization and the need for the melting point and the emitting smoke at the time of shaping are suppressed since a molecular weight distribution is narrowly controllable, and the straight chain-like low density polyethylene (metallocene LLDPE) in which the polymerization was carried out by the metallocene system catalyst possesses the elastomer-engine performance, it is more desirable.

[0018] The thing with desirable Metallocene LLDPE is because flexibility is excellent, although it is resin non-constructing a bridge, and the reason is considered to be existence of the polymer chain (Thailand molecule) which combines a crystal partial comrade. Since not only between the time of ordinary temperature and shaping but polymer molecules is the three-dimension network structure as for a bridge formation rubber elasticity object, although flexibility improves, it is the cause of worsening a fluidity. However, although a fluidity is good since a polymer chain can exercise freely like polyethylene usual in a hot molding temperature in the case of Metallocene LLDPE, near ordinary temperature, the Thailand molecule which combines a polymer crystal comrade with crystal growth and coincidence generates, the false structure of cross linkage is formed, and tensile strength and toughness are good.

[0019] 10-50 micrometers can be applied as thickness of the flexible material layer 15, and it is 20-40 micrometers preferably. Cushioning properties are less than [this] missing, it is superfluous and cushioning properties' is [thermal conductivity requires a heating value bad and superfluous at the time of a seal, and] useless in respect of cost at more than this.

[0020] (The laminating approach) a dry lamination process well-known as a laminated layers method of the base material film 11 and the flexible material layer 15, and extrusion lamination NESHON -- law can be applied and it is an extrusion coating method preferably. The laminated layers method by the dry lamination process can apply a dry lamination process or a non solvent lamination process. Moreover, easily-adhesive processing of corona discharge treatment, plasma treatment, ozonization, frame processing, etc. is preferably performed to the adhesives stratification plane of the flexible material layer 15 beforehand. As adhesives of the adhesives layer 13 used with this dry lamination process, the hardenability adhesives hardened by ionizing radiation, such as heat, or ultraviolet rays, an electron ray, etc., are applicable.

[0021] as the thickness of this adhesives layer 13 -- 0.05-30-micrometer (dryness) extent -- it is 2-20 micrometers preferably. Less than [this], wrap membrane formation is not obtained for thickness in the whole surface, but sufficient adhesive strength is insufficient, and it is beyond the need and is useless in respect of cost at more than this. the mixing ratio of principal component resin and a curing agent -- a rate -- the principal component resin 100 mass section -- receiving -- a curing agent 1 - 100 mass sections extent -- they are a curing agent 2 - 50 mass sections to the principal component resin 100 mass section preferably. Hardening of adhesives runs short of curing agents below in 1 mass section, the rigidity as the whole covering tape runs short, and a zip rise becomes large. Moreover, when a curing agent exceeds the 100 mass sections, at the time of transportation with the taping package object which the bond strength of a base material film and a flexible material layer fell, and was filled up with the production process of a covering tape, and electronic parts, it is at the mounting time of components and a base material film may exfoliate.

[0022] An extrusion lamination process can apply the well-known lamination process which this contractor calls an extrusion lamination (it is called an extrusion lamination process and the poly sandwiching method), a coextrusion lamination (it is called a co-extrusion lamination process), extrusion coating (it is also called EC and an extrusion coating method), coextrusion coating (it is also called a co-extrusion coating method and Co-EC), etc.

[0023] (Ingredient of a heat glue line) Subsequently the heat glue line 17 is formed in the 15th page of a flexible material layer. When forming the heat glue line 17 in the 15th page of a flexible material layer, it is desirable to carry out easily-adhesive processing to the 15th page of a flexible material layer. The primer layer for raising both adhesive property is prepared, or corona discharge treatment, plasma treatment, ozone gassing, frame processing, a preheat treatment, etc. can be applied, and easily-adhesive processing has a primer layer or desirable corona discharge treatment. As this primer layer, a copolymer with polyurethane resin, polyester resin, a vinyl chloride vinyl acetate copolymer, acrylic resin, ethylene, styrene, a butadiene, etc. can be applied, and the shape of rubber and elastomers, such as butadiene system rubber and acrylic

rubber, may be added if needed, for example.
 [0024] It dissolves or distributes to a solvent suitably, and these resin is used as coating liquid, and this is applied to the 15th page of a flexible material layer with coating methods, such as well-known roll coating, and it dries, and considers as a primer layer. Moreover, it may be made to react by aging processing after combining suitably, or applying a monomer, oligomer, a prepolymer, etc. a reaction initiator and a curing agent, a cross linking agent, etc. to resin combining base resin and a curing agent, and drying or drying, and you may form. About 0.05-2 micrometers of thickness of this primer layer are 0.1-1 micrometer preferably. Since it is pasted firmly and almost can moreover be disregarded in thickness to it if the heat glue line 17 is applied to this corona treatment side, the rigidity as the whole covering tape does not go up, and is more suitable.

[0025] (Corona treatment) Corona discharge treatment is an art which impresses the high voltage to a counterelectrode and a discharge electrode, showers the corona discharge flame from this discharge electrode over a processed object, reforms the front face by oxidation etc. using the corona surface treatment equipment which causes corona discharge, and raises a hydrophilic property. Corona treatment is performed to the 15th page of the flexible material layer of this invention, and 0.00040Ns /or more of surface tension of the 15th page of this flexible material layer are [cm] 0.00043 or more N/cm still more preferably preferably more than 0.00036 N/cm extent. Since it is pasted firmly and almost can moreover be disregarded in thickness to it if the heat glue line 17 is applied to the corona treatment side of the 15th page of this flexible material layer, the rigidity as the whole covering tape does not go up, and is more suitable.

[0026] (Ingredient of a heat glue line) This heat glue line 17 may add additives, such as a dispersant, a bulking agent, a plasticizer, a coloring agent, and an antistatic agent, if needed including thermoplastics and a conductive particle. As thermoplastics, acrylic resin, such as ionomer resin, acid denaturation polyolefine system resin, an ethylene-(meta) acrylic-acid copolymer, an ethylene-(meta) acrylic ester copolymer, polyester system resin, polyamide system resin, vinyl system resin, and acrylic, an methacrylic system, acrylic ester system resin, maleic resin, butyral system resin, an alkyd resin, polyethylene oxide resin, polyurethane system resin, silicone resin, rubber system resin, etc. are applicable, for example. These thermoplastics can be used combining independent or plurality. Moreover, the resin which makes a principal component acrylic resin, polyester system resin, polyurethane resin, a vinyl chloride vinyl acetate copolymer, an ethylene-vinylacetate copolymer, or these from the dispersibility of a conductive particle and the adhesive property to a carrier tape is suitable. Moreover, since the thermoplastics used for the heat glue line 17 can perform good heat sealing in an operation of the flexible material layer 15 as mentioned above, it can think balance with a carrier tape as important and can select it free.

[0027] (Conductive particle) Metallic oxides, such as the thing and barium sulfate which gave conductivity to sulfides, such as zinc sulfide, copper sulfide, a cadmium sulfide, a nickel sulfide, and sulfuration palladium, or tin oxide, a zinc oxide, indium oxide, and titanium oxide, a conductive carbon particle, a silicon organic compound, or a surface metal plating particle can be used for a conductive particle. Preferably, metallic-oxide particles, such as a tin oxide system, a zinc oxide system, an indium oxide system, and a titanium oxide system, a conductive carbon particle, an antistatic mold silicon organic compound, or a surface metal plating particle is suitable. The indium oxide which doped the tin oxide which doped antimony, and tin in the metallic oxide is suitable. In filler metal with large particle diameter, the transparency of a covering tape is reduced and it is hard to check the electronic parts contained from the outside. Moreover, a surfactant has a humidity dependency, under low humidity, does not have sufficient antistatic effectiveness and has a possibility of destroying electronic parts. What is necessary is just to use together what has small particle diameter, the made small quantity which can maintain transparency, or other transparent conductive particles, although a carbon particle and a surface metal plating particle are also opaque. Such a conductive particle has that desirable whose mean particle diameter of a primary particle is 0.01-10 micrometers. As a configuration of a conductive particle, although the shape of a needle, a globular shape, and scaphocerite, corniform, etc. are applicable, the shape of transparency to a needle is desirable.

[0028] The content in the mass criteria of the conductive particle contained in the heat glue line 17 can apply the range of the conductive particles 150-500 to thermoplastics 100, and makes it preferably the range of the conductive particles 150-300 to thermoplastics 100, and sets preferably about 0.05-1.9 micrometers of 0.1-1.7 micrometers of thickness of the heat glue line 17 to 0.5-1.5 micrometers still more preferably. Since the thickness of the heat glue line 17 is as thin as 0.05-1.9 micrometers in the content of a conductive particle being under the above-mentioned range, if conductivity is low, and antistatic nature is not obtained and the above-mentioned range is exceeded, transparency will fall and heat-sealing nature with a carrier tape will be checked. It is important to have the content range and thickness range of this conductive particle. In addition, a content is mass criteria as long as there is no notice. In addition, since it is easy to come out of an

error thinly, after the thickness of the heat glue line 17 finds the weight of predetermined area, it is converted and computed from the specific gravity of the heat glue line 17 to thickness.

[0029] Formation of the heat glue line 17 distributes or dissolves in a solvent, applies an additive by the coating approaches, such as a roll coat, a reverse roll coat, a gravure coat, and a gravure reverse coat, makes it dry and makes the heat glue line 17 to accept the above-mentioned thermoplastics, a conductive particle, and the need, and form.

[0030] Antistatic treatment may be performed using conductive particles, such as a surface active agent, a silicon organic compound, conductive carbon black, metal vacuum evaporation, and a metallic oxide, etc. if needed, the opposite field, i.e., outermost side, of the heat glue line 17 of the base material film 11. What is necessary is to be able to apply the thing same as this antistatic ingredient as the electric conduction agent used for the heat glue line 17, and just to perform antistatic treatment by the well-known coating approach. Generating of static electricity by contact to antisticking, such as dust and Chile, or other fields can be prevented on the front face of the base material film 11.

[0031] Here, the heat-sealing nature by the synergistic effect of the flexible material layer 15 and the heat glue line 17 which is specifically excellent is explained. In the ***** part of this heat-sealing mold, the heat glue line 17 heat seals heat sealing with KYARIATE-PU using the Rhine-like heat-sealing mold whose width of face is about 0.1-5mm. On the other hand, since a pressure concentrates on the both ends of the cross direction of this heat-sealing mold when heating pressurization is carried out with a heat-sealing mold, the resin of the flexible material layer 15 located especially in both ends becomes soft with the property of this resin, and the resin of the flexible material layer 15 becomes easy to flow. This softened flexible material layer 15 and the heat glue line 17 in the 15th page of this flexible material layer will be in a resin rich area ball condition in the both ends of the cross direction of a heat-sealing mold.

[0032] This resin rich area ball flows along a carrier tape side in the both ends of the heat-sealing mold of the carrier tape 3. Although the pocket which contains electronic parts is fabricated, and the heat-sealing side of this carrier tape deforms or has curved, by a resin rich area ball flowing, resin is buried, and by high wettability, it can be stuck well and can be heat sealed. Thus, heat sealing stabilized extremely is obtained with heat sealing of the width-of-face part of a heat-sealing mold, and the resin rich area ball part of the both ends of a heat-sealing mold. Thus, the very thin heat glue line 17 can also heat seal now the flexible material layer 15 of a covering tape on a carrier tape by giving moderate flexibility, i.e., cushioning properties, and a fluidity, and multiplication heat-sealing nature discovers the heat-sealing nature stabilized specifically.

[0033] Thus, since there is a flexible material layer 15 and heat sealing stabilized to the carrier tape 3 can be performed, the thermoplastics which is excellent in properties, such as low-temperature heat-sealing nature, can be selected free as an ingredient of the heat glue line 17. The heat-sealing section of peel strength of the covering tape 1 and KYARIATE-PU 3 is low stable, and gives storage, transportation, and the reinforcement that bears a vibration in use and an impact with a mounting machine. And even if mounted with the mounting machine which has accelerated small electronic parts, a zip rise is a pile to the elutriation of components very few. Moreover, although it is easy to cut a covering tape in the exfoliation at the time of high-speed mounting, if the laminating of the flexible material layer 15 is carried out to the covering tape 1, by the toughness of this flexible material layer 15, it will be hard coming to cut a covering tape, a halt of a mounting machine will be prevented, and operation effectiveness will not be reduced.

[0034] The rigidity of the covering tape of this invention set to $t=0$ the time of pushing in the sample set as a width of 15mm, and loop-formation die length of 62mm in the membrane formation direction using the loop-formation stiffness circuit tester (Product made from an Oriental energy machine) 5mm, measured the stiffness reinforcement f the following 3, 5, and 10 and as of 30 minutes, and made the maximum stiffness reinforcement in the meantime the initial impact resistance value. and t ($3 \leq t \leq 30$) -- and -- and regression line $f = -at + b$ was calculated with the least square method from f , and a and b of this invention were computed. It has too strong rigidity that an initial impact resistance value is larger than 50g, it is large, in 4g or less, the nonuniformity of heat sealing influences peel strength and a zip rise is presumed to become large. [of a zip rise] That a is large means that fluctuation of f is large, a zip rise becomes large, and fluctuation of f means a small thing and the small things of a are ***** and a desirable thing infinite 0. It is in the inclination for an initial impact resistance value to be also large that b is larger than 50g, rigidity is too strong and a zip rise becomes large. Conversely, by less than 4g, an initial impact resistance value also has b in a small inclination, the nonuniformity of heat sealing influences peel strength directly, and a zip rise becomes large.

[0035] Although rigidity can be enlarged as thickening thickness of 50 micrometers or more and the flexible material layer 15 for the thickness of the base material film 11 with 50 micrometers or more, the heating

value which becomes thick and the heat glue line 17 requires cannot be transmitted, but it is necessary to set up the temperature of a seal bar highly. Therefore, it becomes the cause by which the carrier tape 3 inferior to thermal resistance carries out deformation and a dimensional change, and the location of the electronic parts to mount is changed. Moreover, by 10 micrometers or less, rigidity falls the thickness of 12 micrometers or less and the flexible material layer 15 in the thickness of the base material film 11, and a zip rise becomes large and is not desirable. Even if the peel strength of the covering tape 1 is proper, if a zip rise is large, electronic parts will jump out of a carrier tape, and mounting stabilized at high speed cannot be performed. As a result of inquiring wholeheartedly, it has become clear that a zip rise is related also to the rigidity of a covering tape, a zip rise will become large if the rigidity of a covering tape is small, and a zip rise will become small if rigidity is conversely large within fixed limits.

[0036] (Surface-electrical-resistance value) The surface-electrical-resistance value in the heat glue line 17 of this covering tape has desirable within the limits of 105-1013ohm. Moreover, the charge damping time which shows the static electricity property is excellent with 2 or less seconds. If the above-mentioned surface-electrical-resistance value exceeds 1013 ohms, the spreading effect of static electricity will fall extremely and it will become difficult to protect electronic parts from the static electricity destruction. Moreover, when set to less than 105ohms, there is a danger of being destroyed electrically, by energizing from the exterior to electronic parts through a covering tape. In addition, the measuring method of a surface-electrical-resistance value and the charge damping time is an approach indicated in the column of the evaluation approach of the example mentioned later.

[0037] (Transparency) The total light transmission as a covering tape is smaller than 100%, 10% or more, it is 50% or more preferably, and they are [75% or more and a haze are large, and] still more preferably [50% or less of] more desirable than 0%. If it does in this way, the electronic parts enclosed with the interior of a taping package object can check easily with viewing or a machine. Total light transmission is difficult for the check of internal electronic parts in 10% or less of transparency. Here, total light transmission is a value smaller than 100%, and, of course, a haze is a larger value than 0, and since two or more layers are prepared, it does not become such a value. In addition, the measuring method of whenever [haze], and total light transmission is an approach indicated in the column of the evaluation approach of the example mentioned later.

[0038] (Peel strength) The flexible layer 15 of this invention does so an operation of the cushion made to stick both sheets to homogeneity, when the covering tape 1 is heat sealed with the carrier tape 3. Moreover, a 10 - 130g/1mm width-of-face grade has the desirable peel strength which exfoliates the covering tape 1 heat sealed from the carrier tape 3. If the peel strength of the carrier tape 3 and the covering tape 1 becomes under 10g/1mm width of face, in case it will transport as a taping package object, there is a danger that will exfoliate and contents will drop out. Moreover, when peel strength exceeds 130g/1mm width of face, in case a covering tape is exfoliated, there is a possibility that the carrier tape 3 may vibrate and electronic parts may jump out.

[0039] (Zip rise) If a zip rise (difference of the maximum of the exfoliation force and the minimum value) is large, at the time of exfoliation of a covering tape, there is a possibility that a carrier tape may vibrate and contents may jump out, and it is not desirable again. A zip rise is larger than 0g/1mm width of face, and is below 20g/1mm width of face preferably below 30g/1mm width of face. Moreover, it is because the carrier tape when exfoliating runs that a zip rise approaches zero infinite smoothly and it is possible that it is not that in which a lower limit exists at a zip rise. [of improvement in the speed of a restoration machine] The measuring method of peel strength and zip rise nature is an approach indicated in the column of the evaluation approach of the example mentioned later.

[0040] (Exfoliating location) It may be able to be suitably chosen by control of heat-sealing conditions again whether interlaminar peeling is made to start depending on a property with the above-mentioned flexible material layer 15 and the heat glue line 17 and a class or cohesive failure is made to cause within a heat glue line. That is, it is high in the temperature at the time of heat sealing, and is long in heating time, and interlaminar peeling can be carried out between the flexible material layer 15 and the heat glue line 17 by strengthening a pressure and carrying out full weld of a carrier tape and the covering tape. on the contrary -- if a carrier tape and a covering tape are stopped in the imperfect welding condition by making low temperature at the time of heat sealing, shortening heating time, or weakening a pressure -- a heat glue line - - ** -- interfacial peeling between carrier tapes (in this specification, the exfoliation which takes place between a heat glue line and a carrier tape is meant, and interlaminar peeling which happens between a flexible layer and a heat glue line is distinguished from a vocabulary side.) Although it being the same as that of the following and the zip rise of 30g or less can be attained, as a routing, heat-sealing conditions are

limited extremely and it is unstable. In this invention, since the resin chosen from the large range can be used as a glue line 17, it can fully heat seal with a carrier tape, and interlaminar peeling can be certainly carried out between the flexible material layer 15 and the heat glue line 17.

[0041] As mentioned above, interlaminar peeling between the flexible material layer 15 and the heat glue line 17 can be attained by fully performing heating and pressurization. For example, it is [whenever / stoving temperature] about two 7 - 30 N/cm about pressurization for 0.05 to 2.0 seconds in 100-200 degrees C and heating time. The peel strength between the layers by 180-degree exfoliation is weaker than the peel strength of a heat glue line and a carrier tape, therefore interlaminar peeling between the flexible layer 15 and the heat glue line 17 can be attained by fully heating.

[0042] Since the covering tape of this invention exfoliates between the flexible material layer 15 and the heat glue line 17, it does not change with heat-sealing conditions a lot. Therefore, heat sealing with a covering tape and a carrier tape can fully be heated, and can be performed. With heating, between the layers of the flexible material layer 15 and the heat glue line 17 is adjusted, and this heat sealing can fully obtain the heat-sealing nature and peel strength which were stabilized more. Although a reason is not clear about adjustment between layers, reduction of the detailed void of the interface between layers, And/or, an interface gets used probably because the resin of the flexible material layer 15 of an interface and the heat glue line 17 is annealed (a functional group is conjectured to be reorganized by the crystal structure or the interface between layers). It is guessed because the layer indirect arrival force (it becomes peel strength in case it exfoliates) of the flexible material layer 15 and the heat glue line 17 is extremely stabilized in predetermined within the limits.

[0043]

[Example] (Example 1) as the base material film 11 -- a Dacron film F type (example of LL-EC) (the Teijin, Ltd. make --) with a thickness of 16 micrometers A polyethylene terephthalate trade name is used. To this base material film 11 The anchor coat agent which consists of the tetra-isobutyl titanate 5 mass section and the n-hexane 95 mass section After applying and drying by the roll coating method so that the thickness after desiccation may be set to 0.01 micrometers Heat and carry out melting of the kernel KC650 (the Japan Polychem make, metallocene LLDPE trade name) with an extruder as a flexible material layer 15, for T dice, expand crosswise [required], expand it, and it extrudes with a thickness of 35 micrometers in the shape of a curtain. It pinched with a rubber covered roll and the cooled metal roll, and three layers of the base material film 11/the support coat agent layer (etching primer layer 13) / flexible material layer 15 pasted up, and the laminating was carried out. Then, with the well-known corona treatment machine, corona treatment was performed to the 15th page of a flexible material layer, and surface tension was made into 0.00040 N/cm. To this corona treatment side, with the gravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness after desiccation might be set to 1.5 micrometers, and the covering tape of an example 1 was obtained. As heat glue line 17 constituent, the diamond NARU BR-83 (Mitsubishi Rayon Co., Ltd. make, acrylic resin trade name) 100 mass section, the antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometers) 150 mass section, and the partially aromatic solvent (it is equivalent mixing about methyl-ethyl-ketone and toluene) 750 mass section were mixed, and it distributed or dissolved, and considered as the constituent.

[0044] (Examples 2-9, examples 1-8 of a comparison) (other examples of LL-EC)

Considering as an ingredient given in Tables 1-4, the thickness after desiccation, and a content as the base material film layer 11, the flexible material layer 15, and a heat glue line 17, this exception obtained the covering tape like the example 1. In addition, for PET of front Naka, polyethylene terephthalate and EVA are [the antimony dope tin oxide and ITO of an ethylene acetic-acid vinyl copolymer and ATO] tin dope indium oxide. Moreover, in order to make an evaluation result easy to compare, the example 1 was indicated also to the table of Tables 2-4.

[0045]

[Table 1]

組成物		実施例1	実施例2	実施例3	比較例1	比較例2
基材	材料	PET	PET	PET	PET	PET
	(厚さ μm)	(16)	(12)	(25)	(16)	(16)
柔軟 材層	材料	ポリセLLDPE	ポリセLLDPE	LLDPE	LDPE	EVA
	(厚さ μm)	(35)	(40)	(30)	(35)	(35)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	ポリエステル (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (200)	ZnO ₂ (300)	ATO (150)	ATO (150)
	(厚さ μm)	(1.5)	(0.5)	(1.7)	(1.5)	(1.5)
	表面抵抗値	○	○	○	○	○
評価	電荷減衰率	○	○	○	○	○
	光線透過率	○	○	○	○	○
	ヘイズ	○	○	○	○	○
	耐摩強度	○	○	○	×	○
	シワアップ	◎	◎	○	×	×

[0046]

[Table 2]

組成物		実施例1	実施例4	実施例5	比較例3	比較例4
基材	材料	PET	PET	PET	PET	PET
	(厚さ μm)	(16)	(50)	(12)	(16)	(16)
柔軟 材層	材料	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE
	(厚さ μm)	(35)	(10)	(50)	(8)	(60)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	ポリウレタン (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (150)	SnO ₂ (150)	ATO (150)	ATO (150)
	(厚さ μm)	(1.5)	(1.7)	(0.5)	(1.5)	(1.5)
	表面抵抗値	○	○	○	○	○
評価	電荷減衰率	○	○	○	○	○
	光線透過率	○	○	○	○	○
	ヘイズ	○	○	○	○	○
	耐摩強度	○	○	○	○	×
	シワアップ	◎	○	○	×	×

[0047]

[Table 3]

組成物		実施例1	実施例6	実施例7	比較例5	比較例6
基材	材料	PET	PET	PET	PET	PET
	(厚さ μm)	(16)	(16)	(25)	(16)	(16)
柔軟 材層	材料	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE	ポリセLLDPE
	(厚さ μm)	(35)	(30)	(20)	(35)	(35)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (200)	ATO (300)	ATO (150)	ATO (150)
	(厚さ μm)	(1.5)	(0.05)	(1.0)	(0.02)	(2.2)
	表面抵抗値	○	○	○	×	○
評価	電荷減衰率	○	○	○	×	○
	光線透過率	○	○	○	○	×
	ヘイズ	○	○	○	○	×
	耐摩強度	○	○	○	○	○
	シワアップ	◎	○	○	○	○

[0048]

[Table 4]

組成物		実施例1	実施例8	実施例9	比較例7	比較例8
基材	材料	PET	PET	PET	PET	PET
	(厚さ μm)	(16)	(16)	(25)	(16)	(16)
柔軟 材層	材料	ポリLLDPE	ポリLLDPE	ポリLLDPE	ポリLLDPE	ポリLLDPE
	(厚さ μm)	(35)	(30)	(20)	(30)	(30)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	塩酸ビ樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (250)	ATO (500)	ATO (100)	ATO (600)
	(厚さ μm)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
評価	表面抵抗値	○	○	○	×	○
	電荷減衰率	○	○	○	×	○
	光線透過率	○	○	○	○	×
	ヘイズ	○	○	○	○	×
	耐熱強度	○	○	○	○	○
	シニアップ	◎	◎	○	○	○

[0049] (Example 10) (Pori Sand's example)

Using a Dacron film F type (the Teijin, Ltd. make, polyethylene terephthalate film trade name) with a thickness of 16 micrometers as a base material film 11, as a flexible material layer 15, it is the T-die forming-membranes method beforehand, and the film-ized thing with a thickness of 20 micrometers was used for the kernel KC650 (the Japan Polychem make, metallocene LLDPE trade name). The laminating of the base material film 11 and the flexible material layer 15 film is carried out by the poly sandwiching method. To the base material film 11, the anchor coat agent which consists of the tetra-isobutyl titanate 5 mass section and the n-hexane 95 mass section After applying and drying by the roll coating method so that the thickness after desiccation may be set to 0.01 micrometers It extrudes in the shape of a curtain so that melting of Myra Son 16 (low density polyethylene, the Mitsui Chemicals, Inc. make, trade name) may be heated and carried out with an extruder, he may be expanded and expanded crosswise [required] for T dice as extrusion resin and thickness may be set to 15 micrometers. Kernel KC650 film with a thickness of 20 micrometers was supplied to this extrusion resin side as a previous flexible material layer 15, and it pinched with a rubber covered roll and the cooled metal roll, and the layer of the base material film 11/the anchor coat layer / extrusion resin layer / flexible material layer 15 pasted up, and the laminating was carried out. Then, with the well-known corona treatment machine, corona treatment was performed to the 15th page of a flexible material layer, and surface tension was made into 0.00043 N/cm. To this corona treatment side, with the gravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness after desiccation might be set to 1.5 micrometers, and the covering tape was obtained. As heat glue line 17 constituent, the diamond NARU BR-83 (Mitsubishi Rayon Co., Ltd. make, acrylic resin trade name) 100 mass section, the antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometers) 150 mass section, and the partially aromatic solvent (it is equivalent mixing about methyl-ethyl-ketone and toluene) 750 mass section were mixed, and it distributed or dissolved, and considered as the constituent.

[0050] (Example 11) (example of dry lamination)

Regent floor line-LL-XUMN [finishing / 40 micrometer / in thickness / double-sided corona treatment / (surface tension of 0.00036Ns/cm)] (the Nimura chemistry company make, LLDPE film trade name) beforehand film-ized as a flexible material layer 15 is used, using a Dacron film F type (the Teijin, Ltd. make, polyethylene terephthalate film trade name) with a thickness of 12 micrometers as a base material film 11. The laminating of this base material film 11 and the flexible material layer 15 is carried out with a dry lamination process. To the base material film 11, it is the bamboo rack A-515 (principal component resin) and bamboo NETO A-12 (curing agent) (all) of a polyurethane system. After applying and drying by the gravure coating method so that the thickness after desiccation may be set to 1.5 micrometers, the adhesives agent using the Takeda Chemical Industries, Ltd. make and a trade name A regent floor line-LL-XUMN film with a thickness of 40 micrometers is supplied as a previous flexible material layer 15, it pinches with a rubber covered roll and a metal roll, and the laminating of the base material film 11/the adhesives layer / flexible material layer 15 is carried out, and it aged for two days and was made to harden at the temperature of 50 degrees C. To the 15th page of this flexible material layer, with the gravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness

after desiccation might be set to 0.5 micrometers, and the covering tape was obtained. As heat glue line 17 constituent, the diamond NARU BR-83 (Mitsubishi Rayon Co., Ltd. make, acrylic resin trade name) 100 mass section, the antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometers) 150 mass section, and the partially aromatic solvent (it is equivalent mixing about methyl-ethyl-ketone and toluene) 750 mass section were mixed, and it distributed or dissolved, and considered as the constituent.

[0051] (The evaluation approach) The result measured as follows was indicated to Table 1 thru/or 4 as evaluation of the covering tape of an example and the example of a comparison about surface electrical resistance, a charge damping factor, total light transmission, Hayes, peel strength, and zip rise nature. Using Huy Lester UP "the Mitsubishi Chemical make and a trade name", the surface-electrical-resistance value was measured on the conditions 22 degrees C and whose relative humidity are 40%, O mark showed it by having considered within the limits of 105 - 1013ohms / ** as success, and x mark showed it by making the outside of the range into a rejection. Using STATIC-DECAY-METER-406C "the product made from Electro-Tech-Systems, and a trade name", charge attenuation factors are the conditions 23**5 degrees C and whose relative humidity are 12**3%, measured the time amount which 5000V to 99% of attenuation takes based on MIL-B-81705C, by considering 2 or less seconds as success, made the rejection what was shown and exceeded by O mark, and showed it by x mark. Total light transmission and Hayes were measured by color computer SM-55C (the Suga Test Instruments Co., Ltd. make, trade name). Total light transmission considered 75% or more as success smaller than 100%, and O mark showed it and it showed it by x mark by making less than 75% into a rejection. Hayes considered 50% or less as success more greatly than 0%, and O mark showed it and it showed it by x mark by making 50% or more into a rejection.

[0052] Peel strength expressed Homo sapiens seal nature, and heat sealed it on the conditions shown below, under the ambient atmosphere of the temperature of 23 degrees C, and 40% of relative humidity, using PEEL-BACK-TESTER (the Vanguard Systems, Inc. make, trade name), it is a part for 300mm/in exfoliation rate, and the value measured at the exfoliation include angle of 180 degrees, O mark showed it by having considered 10 - 130g/1mm width-of-face within the limits as success, and x mark showed it by making the outside of the range into a rejection. Heat-sealing conditions heat sealed the covering tape of each example on the sheet XEG47 of a carrier tape "peace chemistry company make and a trade name", the temperature of 150 degrees C and pressure 20 N/cm², and the conditions for time amount 0.5 seconds. 25 shots (200mm) after performing heat sealing of 50 shots (400mm) were made into the sample by delivery die length of 8mm of a seal head using 2.0mm width-of-face x2 train and the seal head with a die length [this / each] of 16mm. It was larger than 0g/1mm width of face, and zip rise nature considered below 30g/1mm width of face as success, was O mark, was larger than especially 0g/1mm width of face, showed the case below 20g/1mm width of face by O mark, and showed it by x mark by making the thing exceeding 30g/1mm width of face into a rejection.

[0053] All evaluations were success as examples 1-9 showed to Table 1 thru/or 4. All evaluations were success although examples 10 and 11 were not displayed in a table. As the examples 1-8 of a comparison showed to Table 1 thru/or 4, one of evaluation criteria was rejections.

[0054]

[Effect of the Invention] Antistatic nature is secured by the conductivity of a heat glue line, and the electronic parts under receipt or mounting are not destroyed with static electricity. Since the electronic parts which are excellent for the thin heat glue line 17, and are contained can check transparency easily, electronic parts are not used accidentally. Heat-sealing nature is the flexibility of the flexible material layer 15, is stabilized to the carrier tape 3 and can do a seal. For this reason, the heat glue line 17 can select the ingredient which is excellent in properties, such as low-temperature heat-sealing nature, free. It excels in zip rise nature, in case it removes with a mounting machine, electronic parts cannot jump out easily, a halt of a mounting machine is prevented, and the effectiveness of a mounting machine can be improved.

[Translation done.]

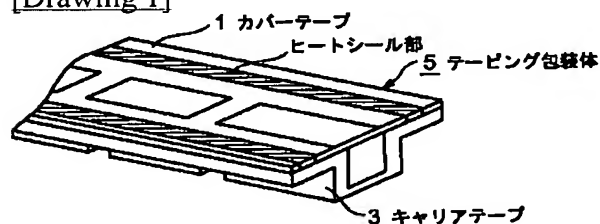
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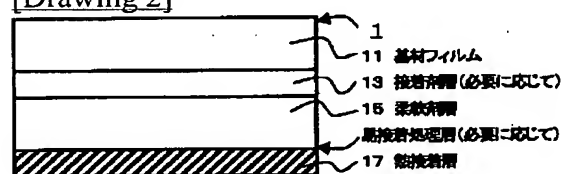
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]